

**Environment and Natural Resources Trust Fund**

# 2021 Request for Proposal

## **General Information**

**Proposal ID:** 2021-202

**Proposal Title:** Studying Solar Panels' Impact On Wetland Quality

## **Project Manager Information**

**Name:** David Shaffer

**Organization:** Minnesota Solar Energy Industries Project

**Office Telephone:** (612) 849-0231

**Email:** shaff081@gmail.com

## **Project Basic Information**

**Project Summary:** Little is empirically known about the impact of solar panels installed above wetlands. We propose studying how the installation of solar panels in wetlands will impact wetland quality over time.

**Funds Requested:** $199,000

**Proposed Project Completion:** 2024-10-31

**LCCMR Funding Category:** Small Projects (H) **Secondary Category:** Air Quality, Climate Change, and Renewable Energy (E)

## **Project Location**

**What is the best scale for describing where your work will take place?** Statewide

**What is the best scale to describe the area impacted by your work?** Statewide

**When will the work impact occur?** In the Future

## **Narrative**

**Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

The regulatory process for approving solar farms can be challenging for local and state agencies, especially those who act as the local government unit (LGU) for the Wetland Conservation Act (WCA). Developers must work collaboratively with LGUs to demonstrate a sequencing process that shows how their projects are avoiding, minimizing, and if necessary, replacing unavoidable wetland impacts. Under the WCA rule, the installation of posts and pilings from solar panels has traditionally not been considered a wetland impact if they do not significantly alter the wetland function and value. But as the solar industry grows, LGUs have had questions about whether the installation of solar panels may lead to loss in wetland quality over time which would be a violation of WCA. A strong measure of wetland quality comes from the diversity of the plants within the wetland and factors like shading from panels and disturbance from construction may lead to conversion of the wetland vegetative community, and subsequently, the wetland quality. Loss of wetlands and wetland quality has overlapping effects on drinking water, lake and stream health, native wildlife, soil heath, and pollinators, all of which are important to our Minnesota ecosystems.

**What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.**

This project will document changes in vegetative cover, diversity and species conservatism under solar panels within wetland habitats at community solar sites. Field surveys will be conducted during the growing season at solar sites throughout Minnesota to document changes to vegetation over time. An initial pilot study was completed by WSB during the 2018 and 2019 growing seasons at sites in Hugo, Sauk Rapids, Stacy, and Forest Lake, MN. Data collection and analysis methodology was developed during this pilot study and is explained in the attached flyer. To expand this research to a regional level, Clearway Energy, US Solar, and other partners have provided an additional 15 sites that may be used for this study throughout Minnesota. We will choose 7 of these sites to add to the current 4 totaling 11 sites. The Board of Water and Soil Resources has also agreed to advise this project as it relates to their wetland regulations and Habitat-Friendly Solar Program.

**What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state’s natural resources?**

Regulators will have a data-driven basis for making wetland impact determinations within their jurisdictions and developers will see more consistency across municipalities during the permitting and site planning processes. We may see that wetland quality improves under solar panels in certain circumstances through the planting of native vegetation upon completion of development. In other scenarios, wetland quality may decrease if the existing wetland was of higher quality prior to development. In addition to wetland quality, we plan to evaluate whether sites are achieving metrics that would make them beneficial to pollinators.

## **Activities and Milestones**

### **Activity 1: Coordinate Site Access and Share Study Results with Project Partners.**

**Activity Budget:** $43,000

**Activity Description:**Coordinating site access and safety training with solar site owners and operators and updating project partners with progress, results and site outcomes. This activity includes project management, meetings with project partners, and coordination with landowners.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Site selection and access from site owners and operators. | 2021-08-31 |
| Update project partners with project status, data collected, and results. | 2022-10-31 |
| Update project partners with project status, data collected, and results. | 2023-10-31 |
| Update project partners with project status, data collected, and results. | 2024-10-31 |

### **Activity 2: Collect Data on Vegetative Quality Under Solar Panels.**

**Activity Budget:** $98,000

**Activity Description:**This activity includes collecting vegetation data from up to 11 solar sites throughout Minnesota. One macroplot will be established within a wetland under planned or constructed panels at each solar site. The macroplots will be surveyed two times per each growing season to gather vegetation cover, frequency, and forb flowering data. These surveys will be conducted for 3 years (2021-2024) to assess changes of vegetation at different stages of solar development.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Collect vegetation data at the solar sites for late growing season 2021. | 2021-10-31 |
| Collect vegetation data at the solar sites for 2022 | 2022-10-31 |
| Collect vegetation data at the solar sites 2023. | 2023-10-31 |
| Collect vegetation data at the solar sites for early growing season 2024 | 2024-08-31 |

### **Activity 3: Data Analysis and Report/Recommendations of Results.**

**Activity Budget:** $58,000

**Activity Description:**Enter data into analysis software to produce measurable results that can be compared over consecutive years of data collection and that will assess the changes in vegetative composition and quality.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Enter and analyze data into the Frames Feats/Firemon Integrated (FFI-Lite) interagency plot-level monitoring software. | 2022-02-28 |
| Summarize and report data each year of surveying. Compare to previous years of data. | 2022-04-30 |
| Enter and analyze data into the Frames Feats/Firemon Integrated (FFI-Lite) interagency plot-level monitoring software. | 2023-02-28 |
| Summarize and report data each year of surveying. Compare to previous years of data. | 2023-04-30 |
| Analyze data to determine if there was a significant change to vegetative quality. | 2024-06-30 |
| Enter and analyze data into the Frames Feats/Firemon Integrated (FFI-Lite) interagency plot-level monitoring software. | 2024-08-31 |
| Final Report | 2024-10-31 |

## **Project Partners and Collaborators**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Organization** | **Role** | **Receiving Funds** |
| Rao Konidena | Rakon Energy LLC | Project supporter and data sharing. Possible solar site access. | No |
| City of Hugo | City of Hugo | Solar site access | No |
| Jesse Royer | US Solar | Solar site access | No |
| Will Carleton | Clearway Energy | Solar site access | No |
| Tom Warner | Chippewa SWCD | Project supporter and data sharing. | No |
| Joel Wurscher | Sibley SWCD | Project supporter and data sharing. | No |
| Shelley Buck | Prairie Island Indian Community | Project supporter and data sharing. | No |
| Rick Reimer | Kandiyohi SWCD | Project supporter and data sharing. In-kind staff time for data collection, landowner contact, plant identification, seed mix recommendations, and public outreach valued at $1,800. | Yes |
| Beau Kennedy | Goodhue SWCD | Project supporter, data sharing, and $2,000 in-kind support | Yes |
| Amanda Erickson | City of Elk River | Project supporter and data sharing | No |
| Jordan Wein | WSB | WSB will provide initial baseline data from 2018 and 2019 for future data analysis. | No |

## **Long-Term Implementation and Funding**

**Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this be funded?**We will investigate local government grant opportunities to expand and/or continue this study after the conclusion of the LCCMR funding cycle. We will also solicit local agencies to continue surveys and data collection that will expand the time scale of this project beyond the work in this proposal.

## **Project Manager and Organization Qualifications**

**Project Manager Name:** David Shaffer

**Job Title:** Executive Director

**Provide description of the project manager’s qualifications to manage the proposed project.**David Shaffer is the Executive Director and manager of the Minnesota Solar Energy Industries Project and the Minnesota Solar Energy Industries Association. He has five years of experience overseeing the development and implementation of programmatic grant work that pertains to benefiting the solar industry in Minnesota. David is a graduate of Vermont Law School and is licensed to practice law in Minnesota. His work in the state has directly lead to hundreds of megawatts of solar in the state through creative policy development and strategic partnerships. David's role in this grant program will be to coordinate and facilitate the research and development of solar in wetlands in an unbiased fashion.

**Organization:** Minnesota Solar Energy Industries Project

**Organization Description:**About MnSEIP:  
Minnesota Solar Energy Industries Project (MnSEIP) is a 501(c)(3) nonprofit organization founded in 2015 that is dedicated to educating the public and business community about Minnesota's solar industry. We partner with organizations across the state to help Minnesota remain a leader in solar energy.  
   
MnSEIP's Mission:  
To support a strong solar industry in Minnesota through education and regulatory work.   
   
MnSEIP's Vision:  
To promote, foster, and advance the public understanding of renewable energy resources through cooperative partnerships with those involved in Minnesota's solar industry and its customers.   
To educate the public on the various applications of solar energy and it's many benefits.  
To engage in appropriate political activities to benefit renewable energy customers and ratepayers.

## **Budget Summary**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category / Name** | **Subcategory or Type** | **Description** | **Purpose** | **Gen. Ineli gible** | **% Bene fits** | **# FTE** | **Class ified Staff?** | **$ Amount** |
| **Personnel** |  |  |  |  |  |  |  |  |
| David Shaffer |  | Project Manager |  |  | 0% | 0.3 |  | $5,000 |
|  |  |  |  |  |  |  | **Sub Total** | **$5,000** |
| **Contracts and Services** |  |  |  |  |  |  |  |  |
| To be determined | Professional or Technical Service Contract | Arranging for survey sites, collecting data, entering and analyzing data, Writing reports. |  |  |  | 0 |  | $194,000 |
|  |  |  |  |  |  |  | **Sub Total** | **$194,000** |
| **Equipment, Tools, and Supplies** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Capital Expenditures** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Acquisitions and Stewardship** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Travel In Minnesota** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Travel Outside Minnesota** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Printing and Publication** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Other Expenses** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
|  |  |  |  |  |  |  | **Grand Total** | **$199,000** |

### **Classified Staff or Generally Ineligible Expenses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Category/Name** | **Subcategory or Type** | **Description** | **Justification Ineligible Expense or Classified Staff Request** |

### **Non ENRTF Funds**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Specific Source** | **Use** | **Status** | **Amount** |
| **State** |  |  |  |  |
|  |  |  | **State Sub Total** | **-** |
| **Non-State** |  |  |  |  |
| Cash | Tribal internal budgets | Cash to pay for field surveys to be done on their land | Pending | $2,000 |
| In-Kind | Internal budgets | Field surveys completed locally | Secured | $11,400 |
|  |  |  | **Non State Sub Total** | **$13,400** |
|  |  |  | **Funds Total** | **$13,400** |

## **Attachments**

### **Required Attachments**

#### ***Visual Component***

File: [8d863ddc-0fe.pdf](https://lccmrprojectmgmt.leg.mn/media/map/8d863ddc-0fe.pdf)

#### ***Alternate Text for Visual Component***

A tentative list of sites where surveys will take place.

#### ***Financial Capacity***

File: [c07aa2bc-775.pdf](https://lccmrprojectmgmt.leg.mn/media/financial_capacity/c07aa2bc-775.pdf)

#### ***Board Resolution or Letter***

|  |  |
| --- | --- |
| **Title** | **File** |
| MnSEIP Resolution | [9b65c243-169.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/9b65c243-169.pdf) |

### **Optional Attachments**

#### ***Support Letter or Other***

|  |  |
| --- | --- |
| **Title** | **File** |
| Letters of support | [44d1b564-a1e.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/44d1b564-a1e.pdf) |
| 990 Postcard | [a7f52e21-f54.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/a7f52e21-f54.pdf) |

## **Administrative Use**

**Does your project include restoration or acquisition of land rights?**   
 No

**Does your project have patent, royalties, or revenue potential?**   
 No

**Does your project include research?**   
 Yes

**Does the organization have a fiscal agent for this project?**   
 No